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ALASKA ARMY NATIONAL GUARD

Final

Mountain Village Federal Scout Readiness Center Record of Decision for Petroleum Contamination

September 2013

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Acronyms and Abbreviations

AAC	*Alaska Administrative Code*
ACL	alternative cleanup level
ADEC	Alaska Department of Environmental Conservation
ARNG	Army National Guard
bgs	below ground surface
DRO	diesel-range organics
FSRC	Federal Scout Readiness Center
GRO	gasoline-range organics
IC	institutional control
mg/kg	milligrams per kilogram

1 Site Name and Location

Facility name: Mountain Village Federal Scout Readiness Center (FSRC), Alaska

ADEC hazard ID: 3064

ADEC file number: 2430.38.001

AEDB-R number: CCAK230971

Site location: Mountain Village FSRC is located is within the City of Mountain Village, which is located on the north bank of the Yukon River at the bottom of the 500-foot Azachorok Mountain, approximately 20 miles west of Saint Mary's and 470 miles northwest of Anchorage. The FSRC is situated in the southern portion of the city, about 550 feet north of the Yukon River. (Figure 1). (Figures are at the end of this Record of Decision).

A legal description of the property is: Lot 8, Block 6, of the Mountain Village Subdivision, located north of Beans Avenue, containing 7,749 square feet (0.18 acre), more or less. The FSRC is located in Section 15 of Township 023 North, Range 079 West of the Seward Meridian within the Bethel Recording District.

Latitude and longitude: 62.085691 degrees north, –163.729718 degrees west, based on the 1984 (revised 2004) World Geodetic System (WGS 84) datum.

Facility owner and point of contact: The facility owner is the Alaska Army National Guard (ARNG), and the point of contact is Lieutenant Colonel Joel Gilbert, CFMO/Environmental, Building 57024, Joint Base Elmendorf-Richardson, Alaska, 99505.

2 Contaminants of Concern and Affected Media

Historical practices have resulted in release of petroleum hydrocarbons to soil and groundwater at Mountain Village FSRC, and the affected areas have been investigated. Based on results of sampling conducted during investigations, the following contaminants of concern and affected media have been identified.

Soil: Diesel-range organics (DRO) and gasoline-range organics (GRO) were detected at concentrations greater than Alaska Department of Environmental Conservation's (ADEC's) most stringent Method 2 cleanup level (Table B2 of Title 18, Chapter 75, Section 75.341[d], of the *Alaska Administrative Code* [AAC]) for sites with annual precipitation greater than 40 inches in surface and subsurface soil to approximately 14 feet below ground surface (bgs). Benzene and 1-methylnaphthalene were detected at concentrations greater than the most stringent ADEC Method 2 cleanup level (Table B1 of 18 AAC 75.341[d]) for sites with annual precipitation greater than 40 inches in surface and subsurface soil to a depth of approximately 2 feet bgs.

Groundwater: Groundwater has not been encountered during site investigations and, therefore, was not sampled.

The maximum reported onsite contaminant concentrations in soil are presented in Table 1.

3 Regulatory Authority

The agency with regulatory authority (ADEC) is identified in applicable State of Alaska regulations as promulgated in the Oil and Hazardous Substance Pollution Control Act, 18 AAC 75, Article 3 (April 8, 2012, Revision).

TABLE 1
Summary of Contaminant Concentrations in Soil
Mountain Village Federal Scout Readiness Center

Chemical of Concern	Maximum Concentration	Sample Depth (feet bgs)
DRO	83,000 mg/kg	0 - 1
GRO	750 mg/kg	1 - 2
Benzene	0.22 mg/kg	0 - 0.5
1-Methylnaphthalene	24 mg/kg	0 - 1

bgs = below ground surface
DRO = diesel-range organics
GRO = gasoline-range organics
mg/kg = milligrams per kilogram

4 Relevant Guidance and Policy

The following ADEC guidance documents are relevant to this Record of Decision: *Policy Guidance to Developing Conceptual Site Models* (2010), *Cumulative Risk Guidance* (2008), *Ecoscoping Guidance* (2012), *Guidance on Using Institutional Controls in Oil and Other Hazardous Substances Cleanups* (2011a), *Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator* (2011b), and Site Closure Memorandum (2009).

5 Confirmed Routes of Exposure

The conceptual model for exposure at Mountain Village FSRC (Figure 2) was developed in accordance with ADEC guidance (2010). Potentially affected media are primarily surface and subsurface soil. The model takes into account past and current sources of contamination, chemical release mechanisms, transport/exposure media, potential exposure points, potential exposure routes, and potential receptors. The assessed routes of exposure are as follows:

- Surface soil ingestion and direct contact pathways are considered complete under current and reasonably expected future conditions.
- Direct contact and ingestion of subsurface soil pathways are considered complete under current and reasonably expected future conditions.
- Ingestion and direct contact with surface water on the property are not considered significant potential exposure pathways because the surface water is typically seasonal in nature and surface water is not likely to be used as a drinking water source.
- Outdoor and indoor inhalation pathways are considered complete for the purposes of this model; however, potential exposure through outdoor inhalation is limited because volatile chemicals are diffused and diluted in the breathing zone, and potential exposure through indoor inhalation is not considered significant because all buildings are constructed on floating (elevated) foundations, generally limiting the pathway.
- All potentially complete ecological exposure pathways are considered insignificant because the compounds of concern for bioaccumulation are not present and because of the small size of the site (ADEC, 2012), the location of the site within the City of Mountain Village, and the presence of a more optimal habitat nearby.
- Though groundwater has not been encountered to date to a depth of 14 feet bgs, the ingestion of groundwater is still considered a complete pathway. Groundwater is assumed to be present on top or within bedrock estimated at 40 to 45 feet bgs.

6 Basis for Action

On the basis of findings of the cumulative risk assessment (CH2M HILL, 2013), it has been determined that, under current conditions, soil contaminated with DRO at Mountain Village FSRC poses unacceptable risk to human health. Remedial actions are necessary to protect human health from the risk associated with potential ingestion of the petroleum-contaminated soil.

7 Site-specific Cleanup Levels

As stated in 18 AAC 75.340(d), for each affected site, a responsible person shall propose soil cleanup levels for hazardous substances in soil for ADEC approval. The proposed soil cleanup levels must be based on an estimate of the reasonable maximum exposure expected to occur under current and future site conditions and must be developed using one or more of the following methods:

- ADEC Method 1 for petroleum hydrocarbon-contaminated soil in a non-Arctic zone, as set out in Table A1 of 18 AAC 75.341(a), or in an Arctic zone, as set out in Table A2 of 18 AAC 75.341(b)
- ADEC Method 2 for soil contaminated with chemicals other than petroleum hydrocarbons, as set out in Table B1 of 18 AAC 75.341(c), or with petroleum hydrocarbons, as set out in Table B2 of 18 AAC 75.341(d)
- ADEC Method 3, for developing site-specific alternative cleanup levels (ACLs)

For each contaminant detected in soil at a concentration above its ADEC cleanup level, the respective cleanup level provided under Method 1 or 2 applies at a contaminated site unless ADEC approves an ACL that has been proposed under Method 3.

For soil contaminated with non-petroleum hydrocarbons, Method 2 cleanup levels were obtained from Table B1 of 18 AAC 75.341(c). Initial Method 2 cleanup levels were originally obtained from Table B2 of 18 AAC 75.341(d) for soil contaminated with petroleum hydrocarbons. Under Method 2, a site-specific ingestion cleanup level for DRO and GRO was developed. The site-specific ingestion cleanup levels for DRO and GRO were then confirmed, through use of an approved fate and transport model, to meet migration-to-groundwater (MTGW) criteria and were, therefore, presented as Method 2 ACLs in *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report* (CH2M HILL, 2013), which has been approved by ADEC (ADEC, 2013). Table 2 summarizes the cleanup levels for Mountain Village FSRC that are deemed protective of human health.

TABLE 2
Site-specific Soil Cleanup Levels
Mountain Village Federal Scout Readiness Center

Contaminant	Maximum Reported Soil Concentration	ADEC Method 2					Approved Site-specific Cleanup Level
		Table B1 Cleanup Level[a]		Table B2 Cleanup Level[b]		Site-specific ACL[c]	
		MTGW	Contact	MTGW	Ingestion		
Main Source Area							
DRO							
Aliphatics (89.19%)	74,028	--	--	7,200	10,000	10,000	10,000
Aromatics (10.81%)	8,972	--	--	100	4,100	4,100	4,100
Total	83,000	--	--	250	10,250	11,212	11,212
GRO							
Aliphatics (49.91%)	374	--	--	270	1,000	1,000	1,000
Aromatics (50.09%)	376	--	--	150	1,000	1,000	1,000
Total	750	--	--	300	1,996	1,400[d]	1,400[d]

TABLE 2
Site-specific Soil Cleanup Levels
Mountain Village Federal Scout Readiness Center

Contaminant	Maximum Reported Soil Concentration	ADEC Method 2					Approved Site-specific Cleanup Level
		Table B1 Cleanup Level[a]		Table B2 Cleanup Level[b]		Site-specific ACL[c]	
		MTGW	Contact	MTGW	Ingestion		
Benzene	0.22	0.025	150	--	--	0.22	0.22
1-Methylnaphthalene	24	6.2	280	--	--	--	6.2

Note: All values are in milligrams per kilogram.
[a]Method 2 cleanup levels obtained from 18 AAC 75.341(c), Table B1
[b]Method 2 cleanup levels obtained from 18 AAC 75.341(d), Table B2, under-40-inch zone
[c] Site-specific ACLs obtained from *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report* (CH2M HILL, 2013) are deemed protective of human health.
[d]Maximum allowable concentration obtained from 18 AAC 75.341(d), Table B2, under-40-inch zone
-- = not applicable
ACL = alternative cleanup level
ADEC = Alaska Department of Environmental Conservation
DRO = diesel-range organics
GRO = gasoline-range organics
MTGW = migration to groundwater

8 Selected Remedy

Remedial alternatives that were evaluated for petroleum-contaminated soil at Mountain Village FSRC are presented in *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report* (CH2M HILL, 2013). The remedial alternatives that were evaluated were institutional controls (ICs) and removal of petroleum-contaminated soil from the site (source removal).

Petroleum-contaminated soil. The remedy selected for petroleum-contaminated soil at Mountain Village FSRC is source removal. ARNG is committed to implementing, monitoring, maintaining, and enforcing all components of the selected remedy to ensure that site conditions remain protective of human health. The major components of this remedy are as follows:

- Excavation of petroleum-contaminated soil containing contaminants at concentrations greater than site-specific cleanup levels presented in Table 2
- Shipment of the excavated soil offsite for either offsite thermal treatment or disposal in an approved offsite landfill

10 References

Alaska Department of Environmental Conservation (ADEC). 2008. *Cumulative Risk Guidance*. June 9.

Alaska Department of Environmental Conservation (ADEC). 2009. Site Closure Memorandum. July 24.

Alaska Department of Environmental Conservation (ADEC). 2010. *Policy Guidance to Developing Conceptual Site Models*. October.

Alaska Department of Environmental Conservation (ADEC). 2011a. *Guidance on Using Institutional Controls in Oil and Other Hazardous Substances Cleanups*. February.

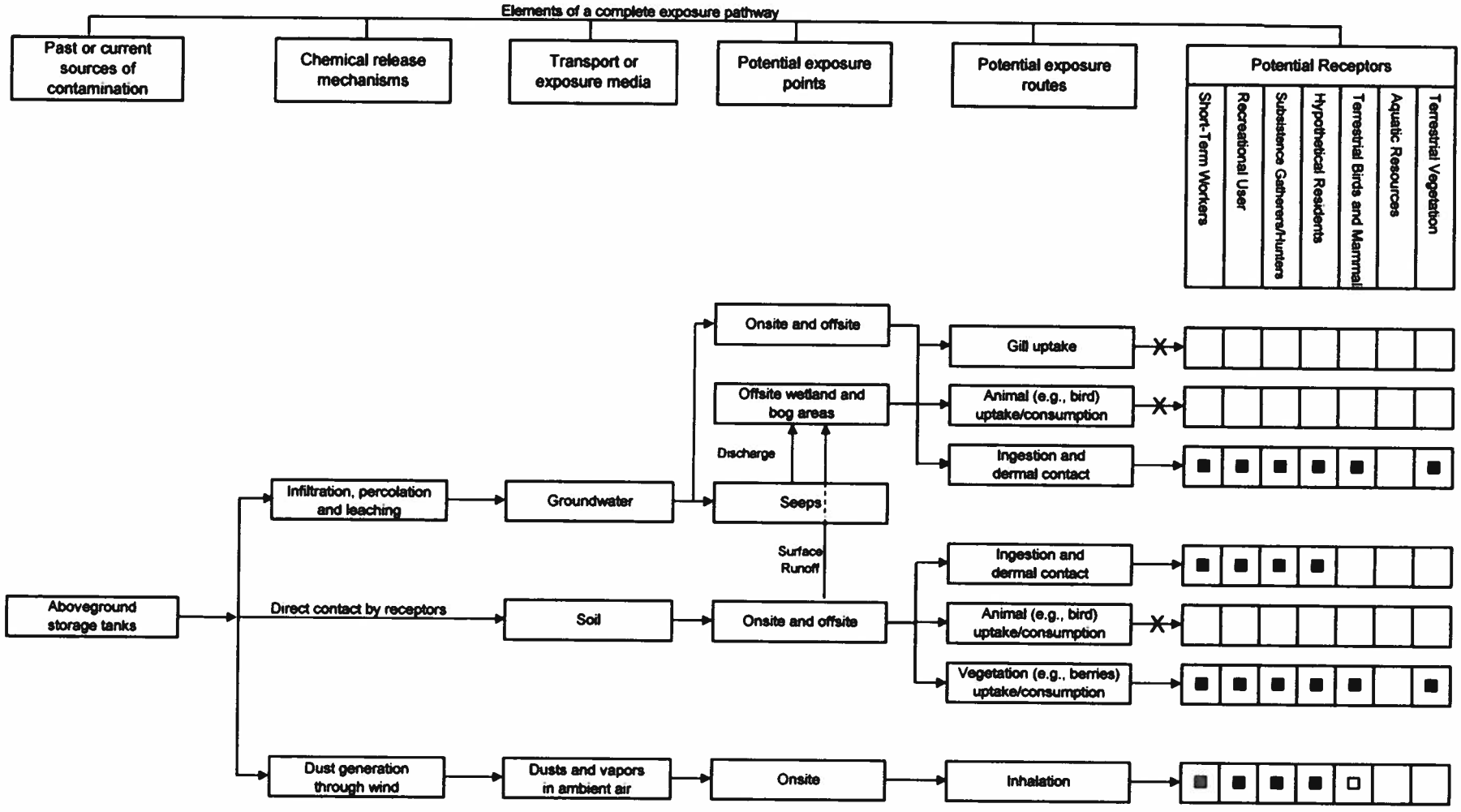
Alaska Department of Environmental Conservation (ADEC). 2011b. *Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator*. February 25.

Alaska Department of Environmental Conservation (ADEC). 2012. *Ecoscoping Guidance*. January.

Alaska Department of Environmental Conservation (ADEC). 2013. Acceptance letter of final *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report*. April 3.

CH2M HILL. 2013. *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report*. Prepared for Alaska Army National Guard, Fort Richardson, Alaska. April.

Figures



■ = Potentially complete pathway (to be addressed quantitatively)

□ = Pathway considered minor (to be addressed qualitatively)

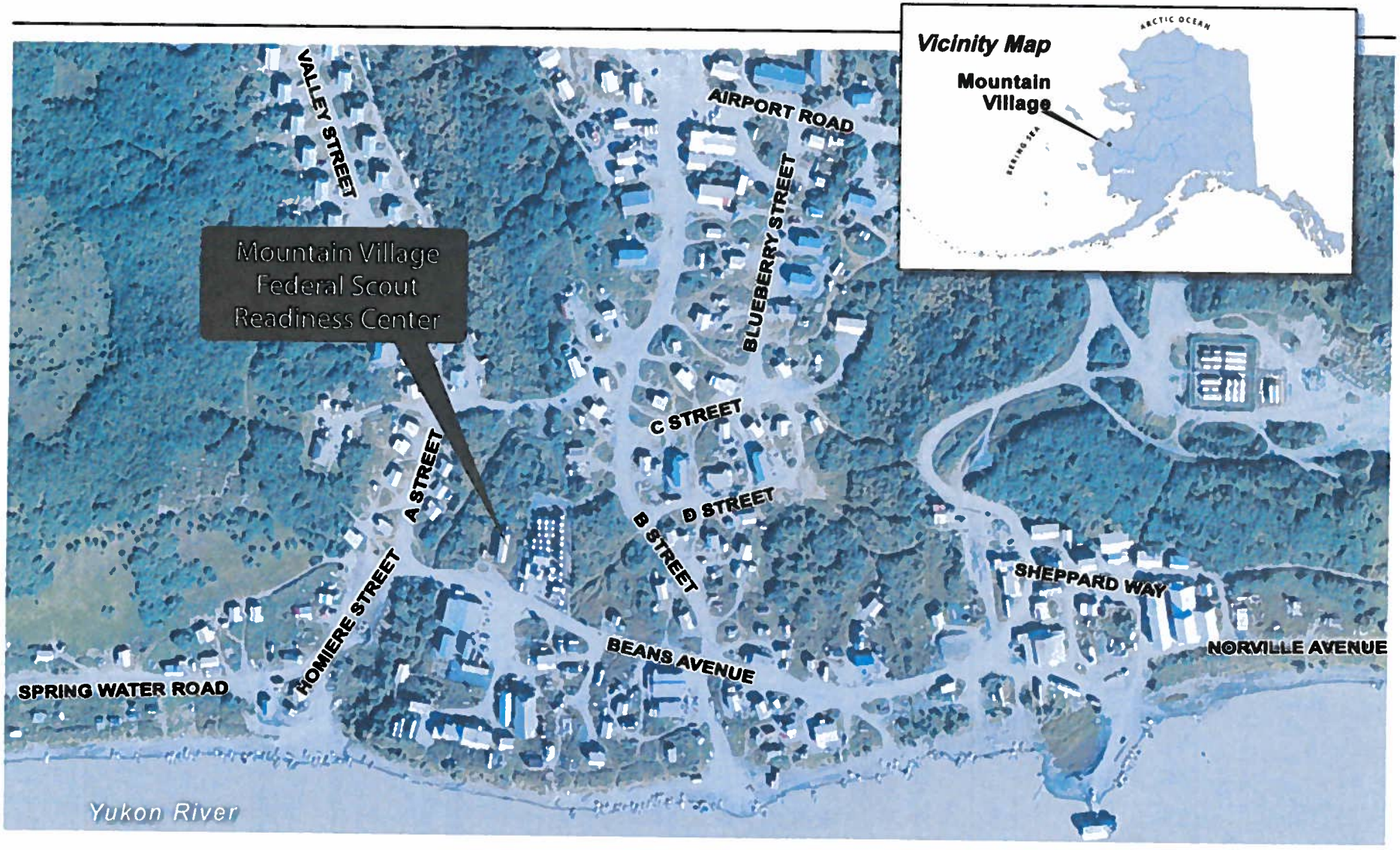
Blank = Incomplete pathway

X = Exposure route is not complete

Note: Exposure pathways assume current conditions of the site.

FIGURE 2
Conceptual Exposure Model
Potential Human and Ecological Exposures
Mountain Village FSRC Record of Decision
Mountain Village, Alaska

CH2MHILL



North

0 300 600

Approximate scale in feet

FIGURE 1
Mountain Village Location Map
Mountain Village FSRC Record of Decision
Mountain Village, Alaska

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